AMENDMENTS TO THE CLAIMS

1-2. (Cancelled)

3. (Currently Amended) An information recording medium comprising a recording layer which can generate a reversible phase change, wherein the recording layer comprises a Ge-Bi-Te-M-based material which comprises Ge, Bi, Te and an element "M" and is expressed with a following formula (1):

$$Ge_aBi_bTe_dM_{100-a-b-d} \text{ (atomic \%)} \quad (1)$$

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "a", "b" and "d" satisfy $25 \leq a \leq 60$, $0 < b \leq 18$, $35 \leq d \leq 55$, and $82 \leq a+b+d < 100$,

wherein the Ge-Bi-Te-M-based material is expressed with a following formula (3):

$$(GeTe)_x[(M_2Te_3)_y(Bi_2Te_3)_{1-y}]_{100-x} \text{ (mol \%)} \quad (3)$$

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "x" and "y" satisfy $80 \leq x < 100$ and $0 < y \leq 0.9$.

4. (Currently Amended) An information recording medium comprising a recording layer which can generate a reversible phase change, wherein the recording layer comprises a Ge-Sn-Bi-Te-M-based material which comprises Ge, Sn, Bi, Te and an element “M” and is expressed with a following formula (2):

~~wherein the recording layer comprises a Ge-Bi-Te-M-based material which comprises Ge, Bi, Te and an element "M" and is expressed with a following formula (1):~~

~~$Ge_aBi_bTe_dM_{100-a-b-d}$ (atomic %) (1)~~

~~wherein "M" represents at least one element selected from Al, Ga and In, and "a", "b" and "d" satisfy $25 \leq a \leq 60$, $0 < b \leq 18$, $35 \leq d \leq 55$, and $82 \leq a+b+d < 100$,~~

~~wherein the recording layer comprises a Ge-Sn-Bi-Te-M-based material which is expressed with a following formula (2):~~

$Ge_aSn_fBi_bTe_dM_{100-a-b-d-f}$ (atomic %) (2)

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "a", "b", "d" and "f" satisfy $25 \leq a \leq 60$, $0 < b \leq 18$, $35 \leq d \leq 55$, $0 < f \leq 15$, $82 \leq a+b+d < 100$, and $82 < a+b+d+f < 100$,

wherein the Ge-Sn-Bi-Te-M-based material is expressed with a following formula (4):

$[(SnTe)_z(GeTe)_{1-z}]_x[(M_2Te_3)_y(Bi_2Te_3)_{1-y}]_{100-x}$ (mol %) (4)

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "x", "y" and "z" satisfy $80 \leq x < 100$, $0 < y \leq 0.9$ and $0 < z \leq 0.3$.

5. (Original) The information recording medium according to claim 3, wherein "x" and "y" satisfy $80 \leq x \leq 91$ and $y \leq 0.5$ in the formula (3).

6. (Original) The information recording medium according to claim 3, wherein "x" and "y" satisfy $85 \leq x \leq 98$ and $y \leq 0.8$ in the formula (3).

7. (Original) The information recording medium according to claim 4, wherein "x" satisfies $80 \leq x \leq 91$ in the formula (4).

8. (Original) The information recording medium according to claim 4, wherein "x" satisfies $85 \leq x \leq 98$ in the formula (4).

9. (Previously Presented) The information recording medium according to claim 3, which comprises two or more information layers, wherein at least one of the information layers has the recording layer comprising the Ge-Bi-Te-M-based material.

10. (Previously Presented) The information recording medium according to claim 4, which comprises two or more information layers, wherein at least one of the information layers has the recording layer comprising the Ge-Sn-Bi-Te-M-based material.

11. (Previously Presented) The information recording medium according to claim 3, which comprises at least a substrate, a first dielectric layer, the recording layer comprising the Ge-Bi-Te-M-based material, a second dielectric layer, an optical compensation layer and a reflective layer, wherein these layers are formed in this order on one surface of the substrate.

12. (Previously Presented) The information recording medium according to claim 4, which comprises at least a substrate, a first dielectric layer, the recording layer comprising the Ge-Sn-Bi-Te-M-based material, a second dielectric layer, an optical compensation layer and a reflective layer, wherein these layers are formed in this order on one surface of the substrate.

13. (Previously Presented) The information recording medium according to claim 3, which comprises at least a substrate, a reflective layer, a second dielectric layer, the recording layer comprising the Ge-Bi-Te-M-based material, and a first dielectric layer, wherein these layers are formed in this order on one surface of the substrate.

14. (Previously Presented) The information recording medium according to claim 4, which comprises at least a substrate, a reflective layer, a second dielectric layer, the recording layer comprising the Ge-Sn-Bi-Te-M-based material, and a first dielectric layer, wherein these layers are formed in this order on one surface of the substrate.

15. (Previously Presented) The information recording medium according to claim 11, wherein a film thickness of the first dielectric layer is not less than 100nm and not greater than 180nm, and a film thickness of the second dielectric layer is not less than 20nm and not greater than 60nm.

16. (Previously Presented) The information recording medium according to claim 12, wherein a film thickness of the first dielectric layer is not less than 100nm and not greater than 180nm, and a film thickness of the second dielectric layer is not less than 20nm and not greater than 60nm.

17. (Original) The information recording medium according to claim 13, wherein a film thickness of the first dielectric layer is not less than 10nm and not greater than 100nm, and a film thickness of the second dielectric layer is not less than 3nm and not greater than 50nm.

18. (Original) The information recording medium according to claim 14, wherein a film thickness of the first dielectric layer is not less than 10nm and not greater than 100nm, and a film thickness of the second dielectric layer is not less than 3nm and not greater than 50nm.

19. (Original) The information recording medium according to claim 11, on and from which information is recorded and reproduced with a laser beam having a wavelength of 650nm to 670nm.

20. (Original) The information recording medium according to claim 12, on and from which information is recorded and reproduced with a laser beam having a wavelength of 650nm to 670nm.

21. (Original) The information recording medium according to claim 13, on and from which information is recorded and reproduced with a laser beam having a wavelength of 650nm to 670nm.

22. (Original) The information recording medium according to claim 14, on and from which information is recorded and reproduced with a laser beam having a wavelength of 650nm to 670nm.

23. (Original) The information recording medium according to claim 11, on and from which information is recorded and reproduced with a laser beam having a wavelength of 395nm to 415nm.

24. (Original) The information recording medium according to claim 12, on and from which information is recorded and reproduced with a laser beam having a wavelength of 395nm to 415nm.

25. (Original) The information recording medium according to claim 13, on and from which information is recorded and reproduced with a laser beam having a wavelength of 395nm to 415nm.

26. (Original) The information recording medium according to claim 14, on and from which information is recorded and reproduced with a laser beam having a wavelength of 395nm to 415nm.

27. (Currently Amended) A method for producing an information recording medium, the method comprising:

forming a recording layer by sputtering using a sputtering target containing Ge, Bi, Te, and an element "M", so as to form the recording layer comprising a Ge-Bi-Te-M-based material,

wherein the Ge-Bi-Te-M-based material is expressed with a following formula (3):

$$(GeTe)_x[(M_2Te_3)_y(Bi_2Te_3)_{1-y}]_{100-x} \text{ (mol \%)} \quad (3)$$

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "x" and "y" satisfy $80 \leq x < 100$ and $0 < y \leq 0.9$.

28. (Currently Amended) The method for producing an information recording medium according to claim 27, wherein the sputtering target further comprises Sn and the sputtering is carried out so as to form the recording layer comprising a Ge-Sn-Bi-Te-M-based material,

wherein the Ge-Sn-Bi-Te-M-based material is expressed with a following formula (4):

$$[(SnTe)_z(GeTe)_{1-z}]_x[(M_2Te_3)_y(Bi_2Te_3)_{1-y}]_{100-x} \text{ (mol \%)} \quad (4)$$

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "x", "y" and "z" satisfy $80 \leq x < 100$, $0 < y \leq 0.9$ and $0 < z \leq 0.3$.

29. (Currently Amended) A recording and reproduction apparatus for an information recording medium comprising a spindle motor which rotates the information recording medium having a recording layer, an optical head provided with a semiconductor laser which emits a laser beam, and an objective lens which focus the laser beam on the recording layer, wherein the recording layer comprises a Ge-Bi-Te-M-based material,

wherein the Ge-Bi-Te-M-based material is expressed with a following formula (3):

$$(GeTe)_x[(M_2Te_3)_y(Bi_2Te_3)_{1-y}]_{100-x} \text{ (mol \%)} \quad (3)$$

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "x" and "y" satisfy $80 \leq x < 100$ and $0 < y \leq 0.9$.

30. (Currently Amended) The recording and reproduction apparatus for an information recording medium according to claim 29, wherein the recording layer comprises a Ge-Sn-Bi-Te-M-based material which further comprises Sn and is expressed with a following formula (4):

$$[(SnTe)_Z(GeTe)_{1-z}]_X[(M_2Te_3)_y(Bi_2Te_3)_{1-y}]_{100-x} \text{ (mol \%)} \quad (4)$$

wherein "M" represents at least one element selected from the group consisting of Ga and In; and ~~from Al, Ga and In, and~~

wherein "x", "y" and "z" satisfy $80 \leq x < 100$, $0 < y \leq 0.9$ and $0 < z \leq 0.3$.

31. (Original) The recording and reproduction apparatus for an information recording medium according to claim 29, wherein a wavelength of the laser beam is from 650nm to 670nm.

32. (Original) The recording and reproduction apparatus for an information recording medium according to claim 29, wherein a wavelength of the laser beam is from 395nm to 415nm.